



Connectors with AMP MCP 2.8™ contact, unsealed SPECIFICATION

AMP MCP 2.8™ 端子 非密封 连接器 产品规范

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1. SCOPE 适用范围

1.1 Content 内容

This specification covers the performance, tests and quality requirements for the unsealed motor-vehicle connectors with secondary locking device in which the AMP MCP 2.8 contact is used. Application sites are the cabin and sealed electronic boxes.

本规范涵盖了使用 AMP MCP 2.8 触点的具有二次锁紧装置的非密封汽车连接器的性能、测试和质量要求。应用地点为机舱和密封的电子盒。

1.2 Qualification 鉴定

When tests are performed, the following specifications and standards shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

本测试规范依照下面的规范及标准执行。所有的检验应依照合适的检验计划及产品图纸执行。

2. APPLICABLE DOCUMENTS 适用文件

2.1 Usable document 使用文件

In the event of conflict between the requirements of this specification and the drawing, the drawing shall take precedent.

In the event of conflict between the requirement of this specification and the referenced documents, this specification shall take precedent.

在本规范的要求与图纸发生冲突时，以产品图纸为准。在本规范的要求与参考文件发生冲突时，以本规范为准。

2.2 TE specifications 泰科电子规范

- A. 109-1: General requirements for Test Specifications / 测试通用规范
- B. Customer drawings, naming and part numbers.
 - 2355073 AMP MCP 2.8 housing, 6pos.
114-18085-25 Interface drawing, 6-21pos.
 - 2355074 AMP MCP 2.8 second lock, 6pos.
 - 1355036 AMP MCP 2.8 contacts
114-18230-002 Interface drawing for tab 2.8x0.8.
 - 1355072 Tab housing.
 - 966140 Tab header.
 - 1355052 Tab 2.8x0.8 contacts.
- C. Product specifications.
 - 108-18513-1 AMP MCP 2.8 contact system.
 - 108-18619-3 Connectors with AMP MCP 2.8 contact, unsealed.
- D. Application specifications
 - 114-18221-3 Housing for AMP MCP 2.8 contact, un-sealed.
 - 114-18148-1 AMP MCP 2.8 contact system.

2.3 Other specifications 其他规范

- A. IEC 60512
Electromechanical components for electronic equipment, basic testing procedures and measuring methods Sev. Editions for single chapters.
- B. ISO 8092/2
Road vehicles connectors for on-board electrical wiring harnesses. Edition 02-199
- C. IEC 60068-2-52
Electrical engineering, basic environmental testing procedures. Edition 02-1996
- D. DIN 40050 part 9
Road vehicles, degree of protection. Edition 05-1993
- E. IEC 529
Degree of protection provided by enclosures (IP code). Edition 11-1989
- F. IEC 60352-2
Solderless connections, part 2: Solderless crimped connections general requirements, test methods and practical guidance. Edition 05-1990.

3. REQUIREMENT 要求

3.1 Design and Construction 设计和结构

Products must meet the design, construction and physical dimensions specified in the applicable product drawings.

产品必须满足产品图纸上的设计，结构和尺寸要求。

3.2 Material 材料

Description of the material sees the related product drawings.

材料描述见相关产品图纸。

3.3 Test parameters and tolerances 测试参数与公差

Table 1: Test parameters and tolerances

Requirement 要求	Tolerance 公差
Ambient temperature 环境温度	23°C ± 5°C
Relative humidity 相对湿度	45% to 75%
Atmospheric pressure 大气压力	96kPa ± 10kPa

3.4 Ratings 等级

- A. Voltage: 28V DC
- B. Current carrying capability:
See derating curves in product specifications of the AMP MCP 2.8 contact 108-18513.
- C. Temperature range:
1) At terminals: see product specification of contact system

2) Housings, long time: -30°C (1.000h) to +100°C (10.000h)

3) Housings, short time (120h): -40 to +120°C

D. Degree of Protection:
IP 30 (except of cable outlet side of housings IP20)

E. Durability:
≤ 10 cycles (tinned contact surface)
≤ 50 cycles (silver plated contact surface).

3.5 General Performance and Test description 通用性能和试验描述

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in Para.4. All testes must be performed at the test condition of the TE test specification 109-1 unless otherwise specified.

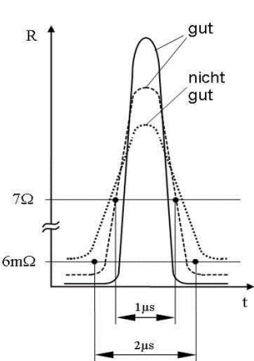
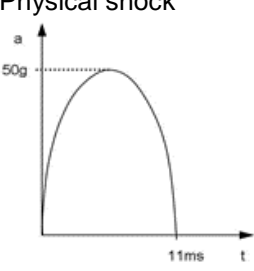
产品应能满足段落 4 中的电气，机械和环境等性能要求。所有试验均需按照 TE 规范 109-1 中的测试条件进行，除非另有说明。

3.6 Tests requirement and method summary 测试要求及方法

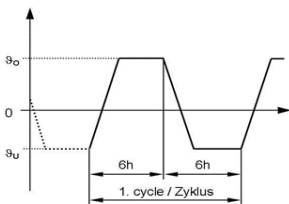
Para.	Test Item	Requirements	Method
3.6.1	Visual inspection	Meets the requirements of product drawing	Acc. to IEC 60512-2, tests 1a and 1b

ELECTRICAL INSPECTIONS			
Para.	Test Item	Requirements	Method
3.6.3	Voltage proof	Value and nature of the test voltage: 500V _{eff} with 50Hz in 1min. No flash-over or breakdown between adjacent contacts and outside contour permitted	Acc. to IEC 60512-2, test 4a, Method to be used: C, Time of testing: 60s
3.6.4	Insulation resistance	Value and nature of the test Voltage: 500 V direct voltage $R_{min}=10^6\Omega$	Acc. to IEC 60512-2, test 3a Method to be used: C
3.6.5	Measuring of resistance	Over all resistance (new state and aged*): $R_{max}=6m\Omega$	Acc. to IEC 60512-2, test 2a

*) ... aged: temperature storage 120h with 120°C

MECHANICAL INSPECTIONS			
Para.	Test Item	Requirements	Method
3.6.7	Contact retention in the housing	Secondary locking: min. 60N in wire direction.	Acc. to IEC 60512-8, test 15a, Testing speed: 25mm/min
3.6.8	Mating and unmating force of connector	Mating: max. 75N (6ways). Unmating: max. 75 (6ways)	Acc. to IEC 60512-7, test 13a, Actuating speed: 25mm/min Number of matings: 50 (surface Ag)
3.6.9	Steady state carrying capacity of connection locking	min. 250N in pull-off direction	Suitable test apparatus with a constant speed within the range of 25mm/min to 50 mm/min
3.6.10	Static load of the connector housings	F=500N in every stable position. No physical damage of housing parts for new state and aged*	Temperature range: $-30^{\circ}\text{C} \leq \vartheta \leq +60^{\circ}\text{C}$, Acting time: 10s
3.6.11	Fall test (resistance against impact)	No physical damage	Acc. to IEC 60512-5, test 7b with: • Wire length/size: 2m/1,5mm ² • Height of wire mounting: 1m • Height of fall: 1m • Cycles: 20
3.6.12	Vibration  Figure 1	No physical damage of housings and contacts, no derogation of function, connection has to stay closed during the test, max. short-time rise of resistance: • 7Ω in max. 1μs, • 6mΩ in max. 2μs with no repeat within 10s No response of output-level control during and after test, Function acc. chapter "Electrical Inspections" ensured after the test.	R/t chart see figure 1, f =10-200Hz, f _ü =30Hz, amplitude = 2,5mm for f<f _ü , a=3g (with tab hsg. resp. header, tab surface Sn) / 5g (with tab hsg., tab surface Ag) / 10g (with tab header, tab surface Ag) for f>f _ü , cycling time: 1 octave/min, Vibration endurance: 3 levels 100h each, with temperature overlay: 20h with -40°C, 80h with +100°C
3.6.13	Physical shock  Figure 2	Function acc. Chapter "Electrical inspections" ensured after the test	Acc. to IEC 50 (draft) with: 3 successive shocks in both directions each of the 3 perpendicular axes → 18 shocks with course acc. to figure 2

*) ... aged: temperature storage 120h with 120°C

ENVIRONMENTAL INSPECTIONS			
Para.	Test Item	Requirements	Method
3.6.14	<p>Operating temperature with single tests:</p> <p>Temperature limits.</p> <ul style="list-style-type: none"> • Long time <ul style="list-style-type: none"> - Cold = 1.000h - Hot = 10.000h • Short time = 120h <p>Temperature change stress</p>  <p>Figure 3</p> <p>Temperature shock</p>	<p>Cold:</p> <ul style="list-style-type: none"> • Long time: -30°C • Short time: -40°C <p>Heat:</p> <ul style="list-style-type: none"> • Long time: +100°C • Short time: +120°C 	<p>Test durance: 120h each temperature (-40°C, +120°C), function test with -30°C -> then 120h/-40°C, parts operating with 120°C</p> <p>$\vartheta O=+120^{\circ}C, \vartheta U=-40^{\circ}C,$</p> <p>$\vartheta=(1,5\pm 0,5)^{\circ}C/min,$ min. 10 cycles acc. to figure 3</p> <p>$\vartheta O=+120^{\circ}C, \vartheta U=-40^{\circ}C,$ 10 temperature changes with reload time between thermal cabinets \leq 1min, delay time in thermal cabinet: 30min.</p>

3.7 Test sequence 试验顺序

No.	Test	TG1	TG2	TG3	TG4	TG5	TG6	TG7
3.6.1	Visual/dimensional inspection	1,7,10	1,5,8	1,3,6	1,3,6	1,3,6	1,3	1,3
3.6.2	Current-carrying capability							
3.6.3	Voltage proof		3					
3.6.4	Insulation resistance		6					
3.6.5	Measuring of resistance	2,4,6,9	2,4,7					
3.6.7	Contact retention in the housing						2	
3.6.8	Mating and unmating forces			2,5				2
3.6.9	Steady state carrying capacity of connection locking							
3.6.10	Static load of the connector housings				2,5			
3.6.11	Fall test					2,5		
3.6.12	Combined vibration and temperature cycling	5						
3.6.13	Physical shock	8						
3.6.14	Operating temperature (pre-aging)	3		4	4	4		

The numbers indicate the sequence of testing.

4. QUALITY 质量

4.1 Qualification test 鉴定

Samples must be in accordance with drawings and be taken in a random way in the production in progress.

样件必须与产品图纸一致，并且是生产过程中随机选取的。

4.2 Requalification test 重新鉴定

If changes significantly affecting form, fit, or function are made to the product or to the manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by product engineering.

如果产品或者制造过程中有显著影响外观，装配和功能的设变，质保需要协调按照原先工程部定义的测试顺序，重新验证全部或者部分测试项目。

4.3 Acceptance 验收

Acceptance is based on verification that the product meets the requirements of section 3.6. Failures attributed to equipment, test setup, or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmitted.

归咎于测试设备，样件安装或者操作员的失误的失效不应判定产品不合格。当产品失效发生时，需要有纠正措施以及重新提交样件进行验证。在重新验证前，需确认已有纠正措施。

4.4 Quality conformance inspection 质量合格检验

The applicable TE Connectivity quality inspection plan will specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification

TE Connectivity 的质量检验计划将指定适用的质量标准。尺寸和功能要求，应按照适用的产品图纸和本规范。